Intelliface - Intelligent Assistant for Interfacing Diagnosis and Planning Systems

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Technical Abstract

To integrate automated diagnosis and automated planning functions, one must translate diagnosed system faults to corresponding changes in resource availabilities. Implementing reliable translation is challenging, time-consuming, and error prone. We propose to develop Intelliface, an intelligent tool for developing interfaces between diagnosis and planning systems. Intelliface will help ensure that plans are revised appropriately when faults occur in complex space systems. In addition, Intelliface will reduce the effort needed to integrate diagnosis and planning systems. Intelliface will encode and apply a qualitative understanding of generic types of devices and their underlying physics (e.g., electrical storage, distribution, and consumption; fluid flow and storage; signal processing, etc.) in order to identify each activity's direct and indirect resource requirements and their dependencies. Intelliface will use the results of this reasoning to generate resource declarations, updated resource availabilities, and some planning constraints in the planning domain modeling language. In addition, Intelliface will support NASA's top-down systems engineering processes for specifying system functional requirements, performance requirements, and interfaces at each system tier. During Phase 2, we will develop a technology readiness level 6 software prototype that demonstrates the feasibility, utility, and usability of the Intelliface concept within a NASA-relevant environment.

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Notes: • Search government wide for technologies.

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